

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Wayne M. Barnes

Serial No. (to be assigned)

Filed October 17, 2001

For DNA POLYMERASES WITH ENHANCED LENGTH OF PRIMER EXTENSION

PRELIMINARY AMENDMENT A

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS,

SIR:

Please enter the following amendment prior to the calculation of the fees and examination of the above-referenced application:

IN THE SPECIFICATION:

On page 1, immediately before FIELD OF THE INVENTION, please replace the paragraph with the following:

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of co-pending U.S. patent application Serial No. 08/931,818, filed September 16, 1997 and allowed May 24, 2001, and is a continuation-in-part of co-pending patent application Serial No. 08/483,535, filed June 7, 1995, which is a continuation-in-part of U.S. Patent No. 5,436,149, filed February 19, 1993.

Please replace the paragraph starting on page 5, line 26, and ending on page 6, line 4 with the following:

In another aspect, a kit for the synthesis of a polynucleotide is provided, comprising a first DNA polymerase which possesses 3'-5' exonuclease activity, and a second DNA polymerase which lacks 3'-5' exonuclease activity, wherein the first DNA polymerase is selected from the group consisting of Pyrococcus furiosus DNA

polymerase, Thermotoga maritima DNA polymerase, Thermococcus litoralis DNA polymerase, and
 Pyrococcus GB-D DNA polymerase, and the second DNA polymerase
 is selected from the group consisting of Thermus aquaticus DNA polymerase, (exo-)
 5 Thermococcus litoralis DNA polymerase,
 (exo-) Pyrococcus furiosus DNA polymerase, and (exo-) Pyrococcus GB-D DNA polymerase.

IN THE CLAIMS:

Please cancel claims 1, 2, 5, 14, 15, and 16, and add new claims 17-36 as follows:

17. (new) A kit for the synthesis of a polynucleotide, said kit comprising:
 - (a) a first DNA polymerase, wherein said first polymerase possesses 3'-5' exonuclease activity selected from the group consisting of *Archaeobacterial* DNA polymerases, and
 - 5 (b) a second DNA polymerase, wherein said second polymerase lacks 3'-5' exonuclease activity selected from the group consisting of thermostable DNA polymerases lacking 3'-5' exonuclease activity.
18. (new) A kit according to claim 3, wherein said *Thermus aquaticus* DNA polymerase is selected from the group consisting of wild-type *Thermus aquaticus* DNA polymerase and N-terminal deleted forms of the same enzyme.
19. (new) A method of amplifying a polynucleotide sequence, said method comprising: the steps of mixing a composition with a synthesis primer, and a synthesis template, said composition comprising
 - (a) a first DNA polymerase, wherein said first polymerase possesses 3'-5' exonuclease activity selected from the group consisting of *Archaeobacterial* DNA polymerases, and
 - 5

(b) a second DNA polymerase, wherein said second polymerase lacks 3'-5' exonuclease activity selected from the group consisting of thermostable DNA polymerases lacking 3'-5' exonuclease activity.

20. (new) A method according to claim 6, wherein said first DNA polymerase comprises *Pyrococcus furiosus* DNA polymerase.

21. (new) A method of claim 7, wherein said *Thermus aquaticus* DNA polymerase is selected from the group consisting of wild-type *Thermus aquaticus* DNA polymerase and N-terminal deleted forms of the same enzyme.

22. (new) A method according to claim 7, wherein said second DNA polymerase comprises *Thermus aquaticus* DNA polymerase.

23. (new) A method according to claim 21, wherein said *Thermus aquaticus* DNA polymerase comprises Klentaq1 DNA polymerase.

24. (new) A method according to claim 20, wherein said second DNA polymerase comprises *Thermus aquaticus* DNA polymerase.

25. (new) A method according to claim 20, wherein said second DNA polymerase comprises Klentaq1 DNA polymerase.

26. (new) A method according to claim 6, wherein said first DNA polymerase comprises Vent DNA polymerase.

27. (new) A method according to claim 26, wherein said second DNA polymerase comprises *Thermus aquaticus* DNA polymerase.

28. (new) A method according to claim 26, wherein said second DNA polymerase comprises Klentaq1 DNA polymerase.

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29. (new) A kit according to claim 3, wherein said first DNA polymerase comprises *Pyrococcus furiosus* DNA polymerase.
30. (new) A kit according to claim 3, wherein said second DNA polymerase comprises *Thermus aquaticus* DNA polymerase.
31. (new) A kit according to claim 18, wherein said *Thermus aquaticus* DNA polymerase comprises Klentaq1 DNA polymerase.
32. (new) A kit according to claim 11, wherein said second DNA polymerase comprises *Thermus aquaticus* DNA polymerase.
33. (new) A kit according to claim 11, wherein said second DNA polymerase comprises Klentaq1 DNA polymerase.
34. (new) A kit according to claim 3, wherein said first DNA polymerase comprises Vent DNA polymerase.
35. (new) A kit according to claim 34, wherein said second DNA polymerase comprises *Thermus aquaticus* DNA polymerase.
36. (new) A kit according to claim 34, wherein said second DNA polymerase comprises Klentaq1 DNA polymerase.

REMARKS

This application is a continuation of 08/931,818, filed September 16, 1997.

This is notification under 37 C.F.R. 1.607(c) that the patent application attorney docket no. TKR 2050.1, entitled DNA POLYMERASES WITH ENHANCED LENGTH OF PRIMER EXTENSION, submitted herewith, contains claims which are identical to claims in U.S. Patent Number 5,556,772. Claims 3, 4, 6-16, in the attached application correspond to claims 1-13, respectively, in Patent Number 5,556,772. These claims were first filed on September 16, 1997 in application Serial No. 08/931,818.

Support for the claims 17-36 can generally be found in U.S. Patent 5,436,149, filed February 19, 1993, and issued July 25, 1995, as follows:

- Claim 17: column 3, lines 62-68, column 4, lines 1-8
column 17, lines 24-29; column 19, lines 16-23;
- Claim 18: column 6, lines 12-18, column 10, lines 23-
27, column 15, lines 5-9; column 17, lines 24-29;
- Claim 19: column 3, lines 62-68, column 4, lines 1-8,
column 17, lines 24-29; column 19, lines 16-23;
- Claim 20: column 17, lines 24-35, column 18, lines 25-
30;
- Claim 21: column 6, lines 12-18; column 10, lines 23-
27; column 15, lines 5-9; column 17, lines 24-29;
- Claim 22: column 3, lines 62-68, column 10, lines 23-
27, column 15, lines 5-9; column 17, lines 24-29;
- Claim 23: column 5, lines 60-63, column 15, lines 5-9,
column 17, lines 24-31, Klentaq1 is a trademarked
commercial name for Klentaq-278;
- Claim 24: column 3, lines 62-68, column 10, lines 23-
27, column 15, lines 5-9; column 17, lines 24-29;
- Claim 25: column 5, lines 60-63, column 15, lines 5-9,
column 17, lines 24-31;
- Claim 26: column 18, lines 30-32; Vent is a trademark
name for *Thermococcus litoralis*;

- Claim 27: column 3, lines 62-68, column 10, lines 23-27, column 15, lines 5-9; column 17, lines 24-29;
- Claim 28: column 5, lines 60-63, column 15, lines 5-9, column 17, lines 24-31;
- Claim 29: column 17, lines 24-35, column 18, lines 25-30;
- Claim 30: column 3, lines 62-68, column 10, lines 23-27, column 15, lines 5-9, column 17, lines 24-29;
- Claim 31: column 5, lines 60-63, column 15, lines 5-9, column 17, lines 24-31;
- Claim 32: column 3, lines 62-68, column 10, lines 23-27, column 15, lines 5-9; column 17, lines 24-29;
- Claim 33: column 5, lines 60-63, column 15, lines 5-9, column 17, lines 24-31;
- Claim 34: column 18, lines 30-32;
- Claim 35: column 3, lines 62-68, column 10, lines 23-27, column 15, lines 5-9; column 17, lines 24-29;
- Claim 36: column 5, lines 60-63, column 15, lines 5-9, column 17, lines 24-31.

No new matter has been added.

VERSION WITH MARKINGS SHOWING CHANGES MADEIN THE SPECIFICATION:

This application is a [continuation-in-part of copending] continuation of co-pending U.S. patent application Serial No. 08/931,818, filed September 16, 1997 and allowed May 24, 2001, and is a continuation-in-part of co-pending patent application Serial No. 08/483,535, filed June 7, 1995, which is a continuation-in-part of U.S. Patent No. 5,436,149, filed February 19, 1993.

In another aspect, a kit for the synthesis of a polynucleotide is provided, comprising a first DNA polymerase which possesses 3'-5' exonuclease activity, and a second DNA polymerase which lacks 3'-5' exonuclease activity, wherein the first DNA polymerase is selected from the group consisting of Pyrococcus furiosus DNA polymerase, Thermotoga maritima DNA polymerase, Thermococcus litoralis DNA polymerase, and Pyrococcus GB-D DNA polymerase, and the second DNA polymerase is selected from the group consisting of Thermus aquaticus DNA polymerase, (exo-) Thermococcus [litoralis] litoralis DNA polymerase, (exo-) Pyrococcus furiosus DNA polymerase, and (exo-) Pyrococcus GB-D DNA polymerase.

IN THE CLAIMS:

Please cancel claims 1, 2, 5, 14, 15, and 16, and add new claims 17-36

CONCLUSION

In light of the forgoing, Applicants request the entry of the amendments and solicit an early allowance of the claims.

If the Examiner has any questions, or would like to discuss any matters in connection with the present application, he/she is invited to contact the undersigned at (314) 231-5400.

A check in the amount of \$1,004.00 is enclosed in payment of the filing fee and for added claims and claims rewritten in independent form. Please charge any fee deficiency or credit any overpayment under 37 C.F.R. 1.16 or 1.17 to Deposit Account No. 19-1345.

Respectfully submitted,



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